

6.0 NEEDS ASSESSMENT

6.1 Context of the City of Toronto Official Plan

The City of Toronto Official Plan sets the context for the potential improvement of transit service on St. Clair Avenue West. The Official Plan sets out a policy of intensification along primary City streets, as a means of accommodating population growth in a sustainable manner. It goes on to designate certain streets as corridors for enhancement of transit service, to accommodate expanding travel demands in a cost-effective and environmentally sustainable way. The Official Plan advocates that Toronto's streetcars should operate in exclusive transit lanes to improve their efficiency and ability to attract new riders. St. Clair Avenue West is one of these streets, as shown in **Figure 6.1.1**.

The Official Plan was approved through an extensive period of public consultation. There is widespread support for the transit-supportive direction of the Plan.

6.2 Physical Condition of the Streetcar Tracks

The TTC has scheduled replacement of the St. Clair streetcar tracks and trackbed for 2005. The replacement was originally scheduled for 2004. This replacement is needed because of the deteriorating condition of the infrastructure. The trackbed has deteriorated to the point where caution flags have been implemented at many locations along the corridor. These require the drivers to slow down to a very low speed, in the range of 5-10 km/hour. To keep the number of such reduced speed zones to a minimum, the TTC must undertake ongoing emergency repairs.

There are numerous locations along the corridor where the aged trackbed has rotted to the point that the tracks have sunk into the roadbed, causing the streetcars to scrape the pavement; in this situation, the streetcars are not securely guided by the rails. This situation needs to be addressed.

The photos in **Figure 6.2.1** illustrate the state of the St. Clair streetcar tracks. They indicate the following conditions:



Source: Urban Development Services, City of Toronto



LEGEND

Existing

—○— TTC Subway and LRT Lines

—○— GO Rail Lines

Expansion Elements

— Transit Priority Segments

FIGURE 6.1.1
Toronto Official Plan Transit Priority Network

- Streetcars scraping the pavement (1)
- A situation in which a van hit a deteriorated, protruding piece of the trackbed, causing an accident which resulted in destruction of the vehicle (2)
- Broken, cracked and fragmented trackbed (3)

Figure 6.2.1: Photographs of the Existing Condition of the St. Clair Streetcar Trackbed



6.3 Existing Transportation Conditions

The St. Clair Streetcar service is an integral link in the TTC's grid network of services. It connects to 16 north-south bus services, and to the Yonge-University-Spadina subway at St. Clair and St. Clair West stations. The streetcar service carries about 32,000 riders per weekday and 28,000 riders per weekend (total of Saturday and Sunday). This is equivalent to over 29,000 auto trips per weekday and about 25,500 auto trips per

weekend, based on the current vehicle occupancy of approximately 1.1 persons per vehicle in the City.

6.3.1 Resident and Employee Travel Patterns

Of the residents in the Primary Study Area, about 36 percent depend on the TTC as their primary mode of transport. This includes over 22 percent of the residents who have access to one or more automobiles but choose transit as their primary trip mode. This level of transit use by those who have a choice is an important fact to consider. It can be construed that these people do not have to use the TTC if service does not meet their needs. Of the business-related travel in the Primary Study Area, an estimated 4,200 employees depend on the streetcar service.

Figure 6.3.1.1 shows the hourly ridership count of 512 St. Clair streetcar at the Keele Street, Dufferin Street and Bathurst Street intersections. This data was collected on Thursday, October 10, 2002. The pattern of streetcar ridership over the course of the day indicates that effective service is needed all day, not just during the weekday peak periods. The transit service frequency and reliability must relate to the transit ridership pattern in this specific area.

A review of auto traffic volumes in the area also contributes to a broader understanding of transportation patterns, including the need and opportunity for improved transit service. A 24-hour traffic count on westbound St. Clair Avenue at Spadina Road, conducted in 2002, shows that traffic demand remains high (near or above 80 percent of capacity) throughout the 9 a.m. to 9 p.m. period. This is illustrated later in **Figure 6.4.1**. This indicates that demand has spread beyond the typical “commuter peak periods” and that there is no residual auto capacity which can be used to accommodate more single occupant vehicle trips. To accommodate more people moving on St. Clair, higher vehicular occupancy (including improved transit service) is needed.

Figure 6.3.1.1: Hourly 512 St. Clair Streetcar Ridership Counts at Keele Street, Dufferin Street, and Bathurst Street (Data collected on Thursday, October 10, 2002)

HOUR STARTS	EASTBOUND			WESTBOUND		
	KEELE	DUFFERIN	BATHURST	KEELE	DUFFERIN	BATHURST
12:00 AM	14	28	25	9	50	113
1:00 AM	3	11	19	2	38	77
2:00 AM	4	2	n/a	n/a	4	12
3:00 AM	n/a	n/a	n/a	n/a	n/a	n/a
4:00 AM	n/a	n/a	n/a	5	8	4
5:00 AM	18	59	107	19	33	13
6:00 AM	36	221	383	35	77	36
7:00 AM	70	428	1049	46	131	101
8:00 AM	130	760	1369	23	133	291
9:00 AM	67	304	599	17	125	263
10:00 AM	39	202	329	19	123	170
11:00 AM	48	212	437	18	172	226
12:00 PM	44	194	371	14	176	263
1:00 PM	46	209	364	23	183	312
2:00 PM	46	175	336	38	271	517
3:00 PM	123	242	421	59	375	583
4:00 PM	65	261	406	47	371	770
5:00 PM	90	299	466	59	533	1107
6:00 PM	77	257	316	53	399	988
7:00 PM	69	154	160	25	187	336
8:00 PM	37	96	116	13	141	337
9:00 PM	42	99	150	20	178	362
10:00 PM	22	52	81	16	139	262
11:00 PM	23	71	87	8	77	176

6.3.2 Inadequacy of the Current Streetcar Service

The 512 St. Clair streetcar service operates in mixed traffic, and it is therefore subject to delays, obstructions, and disruptions from a number of factors, including traffic congestion, private vehicles in collisions on the tracks, private vehicles in collision with the streetcars, and left-turning vehicles blocking streetcars.

The City has implemented a number of restrictions on left turns from the streetcar lanes, during weekday peak periods, in order to improve the reliability of the streetcar service through reduction of interference from left turning traffic. East of Vaughan Road, these generally take the form of not permitting private vehicles to use left turn lanes during the

peak periods; the streetcars are thus unencumbered as they pass through these sections. West of Vaughan Road, left turn prohibitions have been implemented at a number of intersections, including Dufferin Street and Oakwood Avenue, to limit the delay to streetcars from vehicles turning left in front of them.

However, these intermittent restrictions on vehicular access have not resulted in the reliable, quality service needed to keep existing riders and attract new riders in keeping with the Official Plan goals. This conclusion is demonstrated by the following facts:

- Delays to streetcars continue. Most of the streetcar delays on St. Clair are due to its operation in mixed traffic. In 2002, over 1,100 major delays of the St. Clair streetcars were documented;
- The extensive “short-turning” of streetcars. This refers to the situation in which streetcars are turned back before they reach their planned destination, because they are so far behind schedule that corrective action must be taken. This situation causes significant inconvenience to customers, as they are required to exit the short-turned streetcar and wait for a subsequent streetcar on which to complete their trip. This further compounds customers’ perception of poor service quality, and provides additional incentive for people to find another way to travel rather than via transit. Examining the occurrences of short-turns on the 512 St. Clair streetcar route for the years 2001-2003 on a monthly basis, an average of 8% of all trips during the morning peak period were unable to reach their destination, an average of 13% of all trips during the midday were unable to reach their destinations, and an average of 14% of all trips during the afternoon rush hour were unable to complete their destination. In the worst month observed, the short-turning of streetcars escalated to 12% in the morning, 16% in the midday, and 21% in the afternoon;
- Most of the streetcar-short-turns are caused by delays. In 2002, of the approximate 8,000 documented short turns, about 72 percent were due to traffic congestion or collisions. Of these 8,000, over 7,600 occurred on weekdays, which represent an average of about 29 short-turns per day. Conditions worsened in 2003, with the number of short-turns increasing by over 30% to approximately 12,000;
- Collisions occur at the location of the intermittent restrictions. The collision statistics show that some of the highest collision areas are those at which temporal restrictions on turns have been implemented. These include the intersections at Dufferin Street, Oakwood Avenue, Bathurst Street, and Avenue Road;
- The obstructions and delays which the St.Clair streetcar experiences result in significant variability in passengers’ travel time. In a survey undertaken in

September of 2003, streetcars travelling over the “middle” section of the route, between Spadina Road and Lansdowne Avenue, required anywhere from 11 minutes to 33 minutes, with an average of 13 minutes for this section. Such high variability in travel times reduces the dependability of the service and reduces customers’ confidence in how long it will take to make their daily trips by transit.; and

- Comments from the public indicate frustration with the current service provision. This is most notable in the western segments of the street (i.e. west of the Lansdowne loop), where service is most affected by the frequent short turns and collision problems.

The problem of delays is not just a ‘peak-period’ phenomenon. **Figure 6.3.2.1** shows hourly patterns of short turns in the year 2002.

Short-turns occur frequently between 9:00 a.m. and 7:00 p.m. The highest number of short-turns was observed between 2:00 p.m. and 4:00 p.m., which is not the peak traffic demand period.

Figure 6.3.2.1: Hourly Short Turns for the Year 2002, for the St. Clair Streetcar

Hour	Traffic related short turns	Collision related short turns	Total number of short turns (includes causes other than traffic and collision)
12:00 AM	5 (83 %)	0	6
1:00 AM	2 (100 %)	0	2
2:00 AM	4 (80 %)	0	5
3:00 AM	3 (75 %)	0	4
4:00 AM	4 (80 %)	1 (20 %)	5
5:00 AM	1 (100 %)	0	1
6:00 AM	3 (33 %)	5 (56 %)	9
7:00 AM	38 (39 %)	12 (12 %)	97
8:00 AM	55 (34 %)	29 (18 %)	160
9:00 AM	274 (48 %)	32 (6%)	569
10:00 AM	195 (53 %)	18 (5 %)	370
11:00 AM	228 (57 %)	31 (8 %)	400
12:00 PM	285 (62 %)	25 (5 %)	458
1:00 PM	418 (64 %)	49 (8 %)	650
2:00 PM	733 (73 %)	59 (6 %)	1002
3:00 PM	744 (75 %)	43 (4 %)	996
4:00 PM	534 (63 %)	105 (12 %)	854
5:00 PM	565 (62 %)	99 (11 %)	913
6:00 PM	519 (64 %)	85 (10 %)	810
7:00 PM	303 (65 %)	63 (14 %)	468
8:00 PM	113 (63 %)	36 (20 %)	179
9:00 PM	27 (48 %)	19 (34 %)	56
10:00 PM	6 (60 %)	4 (40 %)	10
11:00 PM	5 (83 %)	1 (17 %)	6

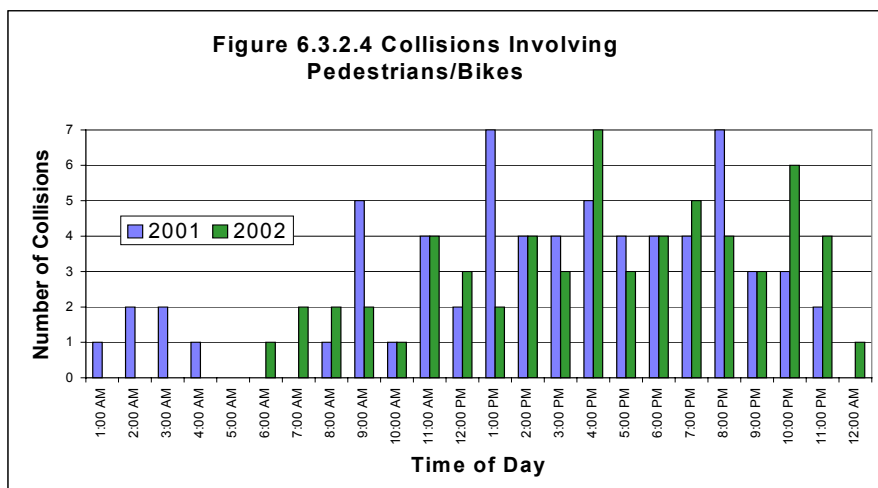
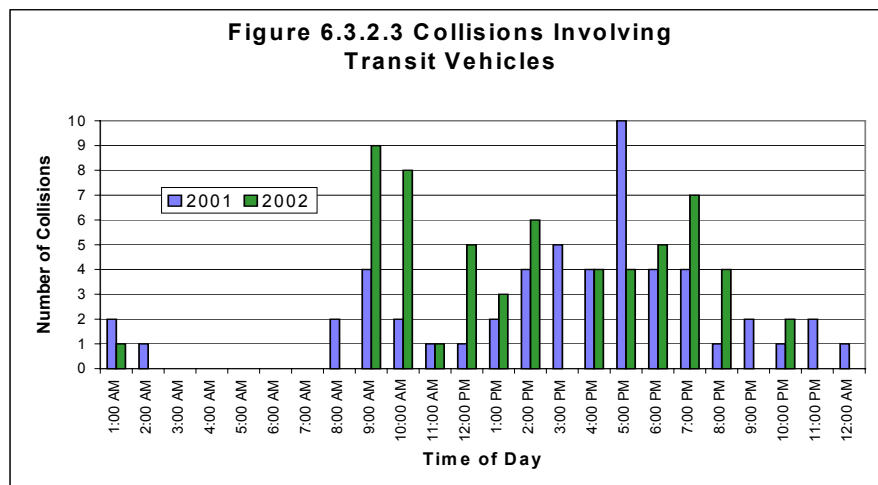
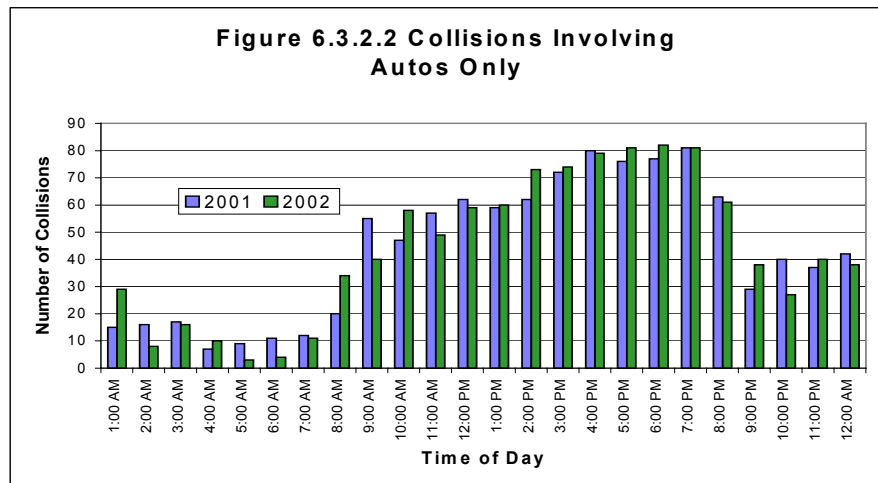
Collision statistics on St Clair Avenue within the Primary Study Area in 2001 and 2002 are shown in **Figure 6.3.2.2** (collisions involving automobiles), **Figure 6.3.2.3** (collisions involving transit vehicles) and **Figure 6.3.2.4** (collisions involving bike/pedestrians). Collisions involving only automobiles show consistent patterns in 2001 and 2002. Auto-only collisions are spread throughout the day. Most collisions that involve autos only occur between 9:00 a.m. and 8:00 p.m. The number of collisions involving TTC and/or pedestrians/bikes is low compared to the number of auto-only collisions. Collisions involving transit and/or pedestrians/bikes are spread throughout the day. The spreading of collisions throughout most of the day correlates to the spreading of peak-hour traffic to accommodate high transportation demand, which is illustrated in section 6.4.

The short-turn and collision statistics show that problems persist throughout the day. A 'peak period solution' will not be able to address St. Clair's needs.

Considering the financial constraints of operating a public transit service, the need for improved service productivity and efficiency of operations is essential for the future success of this transit route.

In summary, customers of the 512 St. Clair streetcar route are subject to long, erratic waiting times, highly-variable travel times, and the highly-inconvenient and frustrating experience of short-turned vehicles.

Typical transit trip times can experience variability of 15 to 25 minutes, in addition to the problem of short-turning. These problems contribute collectively to an inferior and unreliable quality of service which deters people from choosing transit as their preferred mode of travel.



6.3.3 Streetcar Platforms and Stops

Platforms are an essential component of the streetcar service on a wide street such as St. Clair Avenue. Without platforms, riders would have to cross two lanes of traffic between the streetcar and the sidewalk. Good pedestrian access facilities are needed to ensure that riders feel safe and secure using the system. Concerns related to the current platforms and stops are:

- Observations of current conditions indicate that the 1.5-metre width of the streetcar platforms is inadequate for safe passenger manoeuvring;
- There are four stops that do not have platforms in one or both directions. In the eastbound direction, there are no platforms at Keele Street, Old Weston Road, Laughton Avenue, and Lansdowne Avenue. In the westbound direction, there are no platforms at Laughton Avenue, Old Weston Road, and Keele Street. All of these stops are located in the westerly portion of the primary study area; and
- With vehicular traffic sharing the streetcar lanes, rainy and snowy weather means that passengers waiting on the platforms are subject to splattering from passing vehicles.

There is a need for wider platforms at all stops. There is an opportunity to provide a better quality of transit experience for passengers if vehicular traffic is prohibited from the transit lanes and platforms are widened to a minimum of 2.0 metres and 2.4 metres at heavily used stops. The 1.5m platforms are not wide enough to be retrofitted for wheelchair access.

6.3.4 Traffic Capacity Considerations

Traffic capacity has been studied along St. Clair Avenue and parallel routes within the Secondary Study Area. Demand at a number of intersections along these streets results in operation close to their capacity during the peak periods. The mixed traffic operation of the streetcars and the absence of exclusive turning lanes mean that the operation of the street is inefficient relative to the cross-section available (6 lanes in width in much of the corridor). East/west turning movement restrictions have been implemented at virtually all major intersections in the corridor during specific periods of the day; to provide additional general vehicular capacity would only be possible by either eliminating the on-street parking along St. Clair Avenue, restricting turns from minor intersection or restricting turns to St. Clair Avenue from north/south streets. Any of these strategies would be unusual and difficult to enforce.

The computer micro-simulation of the study area traffic flows indicated that progression of traffic through many of the intersections is affected most by north-south traffic volumes. The need to accommodate these flows constrains the amount of "green time" at traffic signals available for east-west traffic.

This analysis demonstrates that there is little reserve capacity remaining to accommodate additional vehicular traffic. As travel demand is expected to increase, it must be accommodated through the use of higher occupancy vehicles (either public transit or carpool/vanpool).

Also, as previously noted, there are four transit stops with no platforms. Passenger boardings and alightings at these locations also delay traffic, because all traffic must stop behind the streetcar. Two of these intersections (Old Weston Road and Keele Street/Weston Road) are key constraint points in the network.

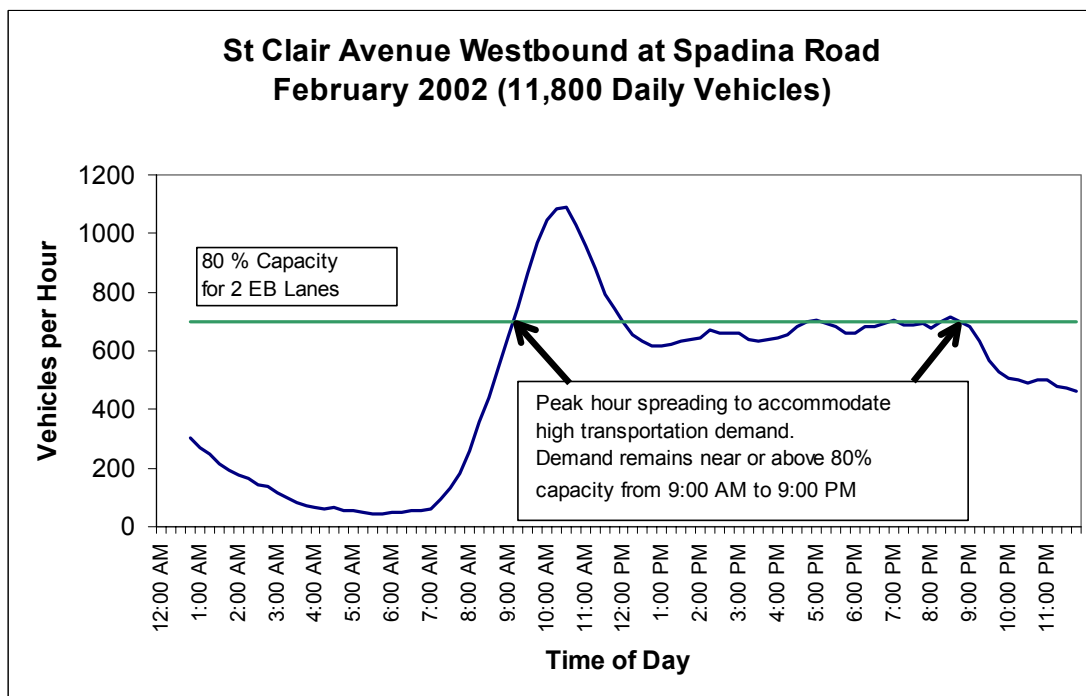
6.4 Projected Future Transportation Demands

Future travel demands have been projected for the 2021 horizon, the year for which land use projections are available. The projection of future travel demands leads to the following conclusions:

- Growth in auto demand cannot be accommodated within the existing capacity of St. Clair Avenue or the parallel streets. Eglinton Avenue is already operating at its effective capacity throughout the day, as are Davenport Road and Dupont Street;
- Transit demands are expected to grow. East/west demands are projected to grow by at least 10% by 2021, which equates to an additional 3,200 riders per weekday and 2,800 riders per weekend (including both Saturday and Sunday) on St. Clair or parallel services within the study area;
- In the future, p.m. peak hour volumes on the roadway network surrounding St. Clair Avenue are forecast to increase by approximately 12% by 2021. On St. Clair Avenue itself the growth in the p.m. peak hour volumes are expected to range from 3% to 16% in the peak direction (average 10%), and from 4% to 35% in the off-peak direction (average 11%). This rate of trip growth along the St. Clair Avenue corridor cannot be accommodated by single occupant vehicles; and
- An enhanced transit service is needed to accommodate both the growth in transit demand and encourage existing and future auto users to switch to transit as most roads are operating at or close to capacity during the rush hour periods. There must be a shift in some trips from auto to transit (or walking and/or cycling), as recognized in the City's Official Plan.

It is important to recognize what happens when area roads reach their capacity during the traditional peak hours. Because the roads cannot accommodate more vehicles during those times, trips begin to spread over a wider time period through the day. This phenomenon is illustrated by **Figure 6.4.1**, which shows the all-day westbound demand on St. Clair Avenue at Spadina Road. The demand spreads to the point where it is near or exceeds 80 percent of capacity from 9:00 a.m. to 9:00 p.m. The demand exceeds 80 percent of capacity from 9:00 a.m. to 12:00 p.m. This phenomenon has been occurring in the City and across the Greater Toronto Area over the past 20 years and has been documented in a series of comprehensive travel surveys, including the Transportation Tomorrow Survey (TTS), that studies travel trends and changing behaviours on a five year cycle.

Figure 6.4.1: Weekday Hourly Traffic Volumes Westbound on St. Clair at Spadina Road



The computer microsimulation of the "do-nothing" case for 2021 shows that:

- Transit travel times on the St. Clair streetcar service in the p.m. peak hour would increase by 12 to 35% relative to existing travel times;
- Streetcars would be able to complete up to 29% fewer trips in the p.m. peak hour;
- Average auto speed on the roadway network during the p.m. peak hour is expected to decrease by 28%;
- Auto travel time along St. Clair Avenue from Runnymede Road to Avoca Avenue is projected to increase by 9 to 20% during the p.m. peak hour; and

- Neighbourhood traffic on east/west roadways is projected to increase by 31% north of St. Clair Avenue, and 21% south of St. Clair Avenue. The north/south neighbourhood traffic is projected to increase by 35% north of St. Clair Avenue, and by 26% south of St. Clair Avenue.

Given projected travel demands for the area, improving the transit service on St. Clair Avenue is essential to accommodating this future travel demand, as it cannot all be accommodated by automobile travel alone. The existing road network can accommodate very little (if any) of the projected growth or redistribution of traffic.

6.5 Public Input

The initial public meetings and stakeholder meetings indicated the need for improved transit service, in the opinion of many of those who were either surveyed or who responded with verbal or written comments at the public meetings.

The project team received approximately 100 public comment sheets during Phase 1 of the study, and about 140 by the end of the first round of Phase 2 public meetings. The majority of responses expressed concerns about the existing public transit services and indicated the need for more reliable and consistent service. At the end of the first round of meetings for Phase 2, the public chose and ranked five criteria among the categories that they thought were most important for assessing the alternatives for St. Clair. A weighted score method was used to determine the five most important criteria in each category. These criteria (in decreasing order of their ranked importance) are as follows:

Transportation

- i. Reliability / quality of service
- ii. Ability to attract riders / accommodate demand
- iii. Safety (vehicles, passengers, pedestrians, cyclists)
- iv. Overall person carrying capacity
- v. Travel time savings

Business and Community

- i. Economic effects on adjacent business
- ii. Effects on neighbourhood traffic volumes and access (existing and future demands)
- iii. Ability to meet Urban Design objectives
- iv. Support of Official Plan and other policy objectives
- v. Effects on property and business access for employees, customers and deliveries

Natural Environment (contained only three criteria)

- i. Air quality
- ii. Natural habitats (plants & animals)
- iii. Stormwater management

Costs (contained only two criteria)

- i. Effects on City/TTC budgets
- ii. Cost effectiveness

Among all the categories, the five criteria that ranked as most important (in decreasing order of their importance to the stakeholders) were:

1. Reliability/quality of service;
2. Ability to attract riders;
3. Economic effects on business;
4. Air quality; and
5. Effects on neighbourhood traffic volume and access.

Improvements in transit service west of Lansdowne Avenue were cited as being needed, due to the frequency of short-turning at Lansdowne. Many in the community expressed concern with respect to the potential effects that a streetcar service with enhanced priority could have on: on-street parking supply; access and loading for businesses with no off-street loading facilities; the economic livelihood of small business operators, and traffic infiltration through residential neighbourhoods. These concerns were expressed most often and more forcefully by the communities west of Bathurst Street, particularly those in the area west of Oakwood Avenue.

The analysis which follows in this report focuses on these areas of concern, within the context of the overall environment.

6.6 Problem Statement

The study process through Phase 1 included consultation with the community with respect to the problem statement. The initial draft problem statement was revised in collaboration with community representatives. The revised problem statement is as follows:

The St. Clair streetcar route carries about half of all trips made on most of St. Clair Avenue West, at various times of the day. The quality, speed, and reliability of this transit service are degraded, at various times of the day and week, by recurring obstruction and delay caused by other

vehicular traffic. These detrimental effects of traffic on the streetcar service are expected to worsen over time, because traffic volumes and congestion will increase due to forecast increases in population and employment in and around the City over the next 20-30 years.

Toronto's Official Plan aims to make more effective use of the City's existing road capacity and to reduce congestion, pollution and energy consumption by encouraging more people to travel by transit. This requires enhancing the attractiveness of bus and streetcar services through improving their frequency, speed, reliability and comfort. The purpose of this study is to identify how to bring about such improvements to streetcar service on St. Clair Avenue West in a manner that recognises the needs of other road users, reflects the revitalisation objectives of the communities along St. Clair, contributes to the City's community-building objectives, respects the policies of the Plan, and will be sustainable under future conditions.

6.7 Ancillary Needs and Opportunities

The Phase 1 consultation with the community and the analysis of baseline conditions has led to the identification of the following **needs** in the St. Clair study area, which are ancillary to the issue of transit service improvements:

- Improved parking supply in selected areas, oriented to the needs of the business community;
- Improved pedestrian access, along St. Clair Avenue and crossing the street; and
- Improved traffic operational strategies. The street is currently characterized by a situation which varies by block, in terms of the lanes which private vehicles can use. This leads to weaving and traffic operational conflicts, resulting in increased collisions.

There are also **opportunities** which can be investigated as part of the assessment of alternative solutions and alternative designs. These include:

- Improved streetscape;
- Enhanced cycling access facilities (east/west and north/south). The Toronto Bike Plan (TBP) does not envision designated bike lanes on St. Clair Avenue West and does not identify St. Clair as part of the formal designated Bike network proposed in the plan. However, the TBP does state that a key principle in making Toronto more bicycle friendly is that every street should be considered a bicycle route, whether or

not it has designated cycling facilities. Therefore, the use of St. Clair Avenue by cyclists should be expected and appropriate action should be taken to ensure that their needs and concerns are addressed and that any improvements to the corridor make it more pedestrian and cycling friendly;

- Expanded plantings of trees, to improve air quality; and
- Improved ground permeability by decreasing the amount of hard surface, to decrease the amount of stormwater runoff.